

**2004 Data Summary
Missouri Nutrition Surveillance System**

Pediatric Nutrition Surveillance



Missouri Department of Health and Senior Services

PREFACE

This document summarizes selected key pediatric health indicators of infants and children, age from birth to 5 years, participating in the Missouri WIC Program in 2004, which contributed to the Missouri Pediatric Surveillance System in 2004.

Missouri Department of Health and Senior Services

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EXECUTIVE SUMMARY

The Pediatric Nutrition Surveillance System (PedNSS) is a national surveillance system created and maintained by the Centers for Disease Control and Prevention (CDC). The purpose of this system is to monitor the growth status of low-income children in federally funded maternal and child health programs. In 2004, the Missouri PedNSS was composed of data collected exclusively from infants and children participating in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Thus, this report describes the growth status of children from low-income families in Missouri from birth up to the fifth birthday during the calendar year 2004. The data on growth (birthweight, short stature, underweight, overweight) and anemia status of infants and children, and the breastfeeding practices of their mothers were collected in WIC clinics, analyzed by CDC, and used in this report.

Low Birthweight

Low birthweight is the single most important factor affecting neonatal mortality and is a determinant of post-neonatal mortality. In Missouri, very minimal improvements in low birthweight have been observed in the PedNSS population from 1995 to 2004. In 2004, low birthweight remained an area of greatest concern for the Black, Non Hispanic racial and ethnic group, because it affected every eighth infant in this group. However, the prevalence of high birthweight has been slightly decreasing since 1996; but has remained steady at 6.9% in 2003 and 2004. White, Non Hispanic and Hispanic had the largest proportions of babies born overweight – approximately one in thirteen infants born to White, Non Hispanic or Hispanic mothers in 2004 had high birthweight.

Short Stature

Short stature is an indication of chronic malnutrition. The Missouri PedNSS rates for short stature have had a small fluctuation from 1995 to 2004, and the percent of short stature infants and children was higher than the average of all other states participating in the surveillance system in 2004. The highest prevalence of this pediatric health indicator was shared among Black, Non Hispanic, Asian/Pacific Islander, and All Other/Unknown race/ethnicities in 2004. With the exception of the Asian/Pacific Islander race/ethnicity, the rates in short stature decreased with the age of the children in 2004.

Underweight

Weight and height were measured to assess the growth status of children participating in the PedNSS. In Missouri, the prevalence of underweight has been slightly declining from 1995 to 2004, and in 2004, was slightly lower than in the national PedNSS. The highest prevalence was in Black, Non Hispanic children. Infants (under 12 months of age) were more likely to be underweight compared to other age groups for all races/ethnicities, except for the American Indian/Alaskan Native racial and ethnic group that showed the lowest rate of underweight in the infant age group.

Overweight and At Risk of Overweight

The rate in overweight of children (birth to 5 years) who participated in Missouri PedNSS has been increasing during the previous 10 years. However, the 2004 Missouri proportion of PedNSS participants that were overweight was lower (12.1%) than the national rate (14.2%).

A similar increase in overweight rate occurred also among children age 2 to 5 years who participated in the Missouri PedNSS. In 2004, Hispanic children were more likely to be overweight, while Black, Non Hispanic children had the lowest rates in overweight. The proportion of overweight children fluctuated with age – the 36-47 months age group showed the highest rate of overweight in 2004.

Anemia

In Missouri, improvements have occurred in the prevalence of anemia (low hemoglobin/hematocrit). The Missouri PedNSS rates for anemia have decreased by 4 percentage points from 1995 to 2004. However, Missouri prevalence was still higher than the national PedNSS in 2004. Approximately one fourth of the Black, Non Hispanic PedNSS participants in 2004 had low hemoglobin/hematocrit. For all age groups, Missouri PedNSS 2004 participants had a higher prevalence of anemia than the nation in 2004.

Breastfeeding Initiation

The percent of women initiating breastfeeding in Missouri PedNSS has been increasing over the last 10 years. However, the prevalence of breastfeeding initiation was lower in 2004 in Missouri compared to the national PedNSS. The Black, Non Hispanic infants were least likely to be breastfed at birth.

INTRODUCTION

The Pediatric Nutrition Surveillance System (PedNSS) is a child-based public health surveillance system that monitors the growth status of low-income, nutritionally at-risk children who participate in federally funded maternal and child health programs. The goal of PedNSS is to collect, analyze, and distribute surveillance data to assist in planning public health nutrition interventions.

In 2004, the Missouri PedNSS represented infants and children who were enrolled in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Data were collected for infants and children up to the fifth birthday, who visited WIC clinics for routine care and nutrition services, including nutrition education and supplemental food. In 2004, the data included demographic information (race/ethnicity and age of the participants), birthweight (low birthweight, high birthweight), growth (short stature, underweight, overweight, at risk of overweight), anemia (low hemoglobin/hematocrit), and breastfeeding initiation.

This report summarizes 2004 PedNSS data, highlights trends on key indicators from 1995 through 2004, monitors the Healthy People 2010 Objectives, and compares Missouri PedNSS with the national PedNSS on selected indicators.

In 2004, the Missouri PedNSS reflected 182,053 records on 141,367 infants and children less than 5 years of age. Almost 23,200 infants and children were from Jackson County. St. Louis City was represented by 15,304 infants and children who participated in WIC in 2004, and 8,305 infants and children from St. Louis County were included in the analysis. The largest number of records contributed from one clinic was from the Springfield-Greene County WIC agency that collected data on 6,437 infants and children.

Limitations of the Pediatric Nutrition Surveillance System

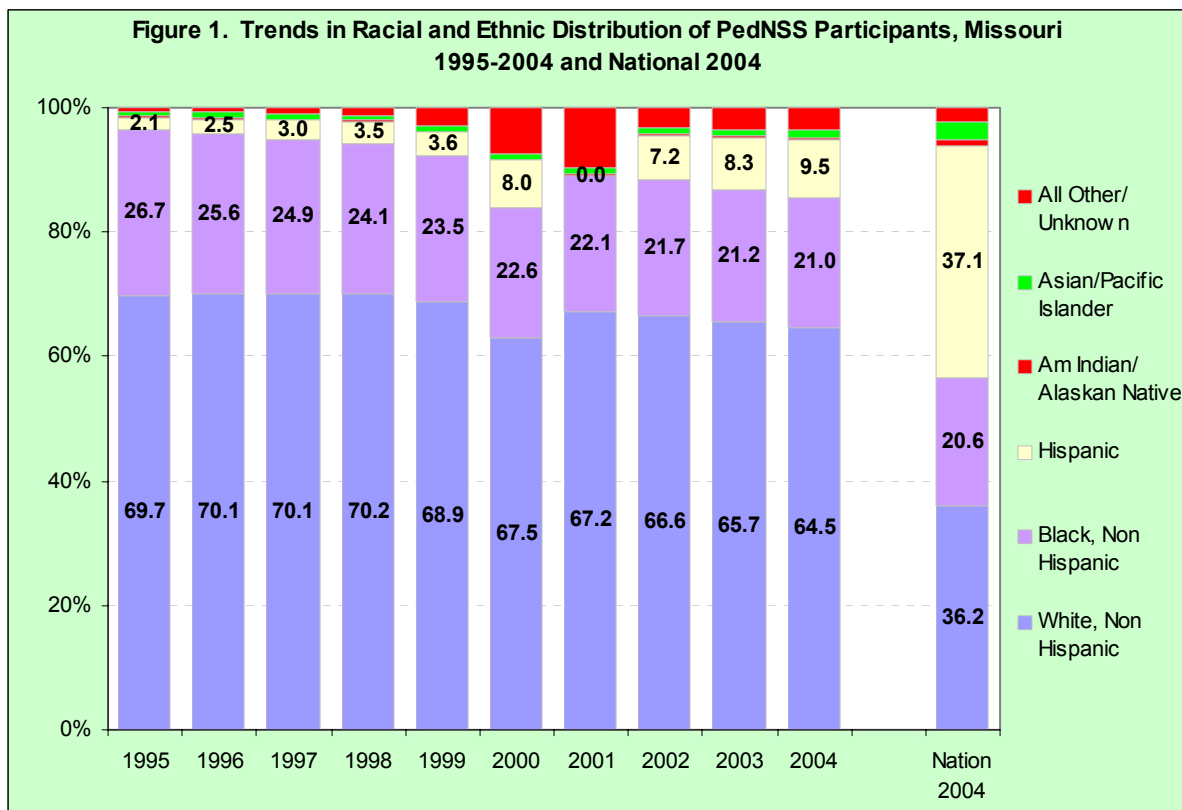
The PedNSS was established to monitor the health status of low-income infants and children. In Missouri, only the WIC program contributed to the PedNSS; therefore, the Missouri PedNSS does not represent all low-income infants and children. Also, care must be taken when comparing PedNSS among states and the national PedNSS, as the data were not always collected from identical populations. However, PedNSS is a unique data set. It is the largest, most diverse (racially, ethnically, and geographically) data set available on low-income infants and children. The contribution of only WIC data to the PedNSS in Missouri allows easier application of the conclusions and recommendations to WIC participants from birth to 5 years of age. Thus, it helps determine risk factors to assist in planning interventions to decrease infant mortality and nutrition-related health problems among the state's low-income infants and children.

DEMOGRAPHIC CHARACTERISTICS

Demographic information, such as race/ethnicity and age, was associated with differences in birth outcomes, greater health risks and poor growth status of infants and children. The impact of these characteristics on key pediatric health indicators will be discussed throughout this report.

Race/Ethnicity

In the Missouri 2004 PedNSS, 64.5% of all children that participated were White, Non Hispanic, 21.0% were Black, Non Hispanic, 9.5% were Hispanic, 0.3% were American Indian/Alaskan Native, 1.2% were Asian/Pacific Islander, and 3.5% were All Other or unspecified races and ethnicities. Racial and ethnic composition of PedNSS participants has been changing over the last 10 years (Figure 1)¹. The proportion of Hispanic children has been increasing from 2.1% in 1995 to 9.5% in 2004². Compared to the National PedNSS, the Missouri PedNSS proportions of Hispanic (9.5% in Missouri and 37.1% in the nation) and Asian/Pacific Islander children (1.2% and 2.9%, respectively) were smaller, while the proportion of White, Non Hispanic and All Other/Unknown categories were larger³.

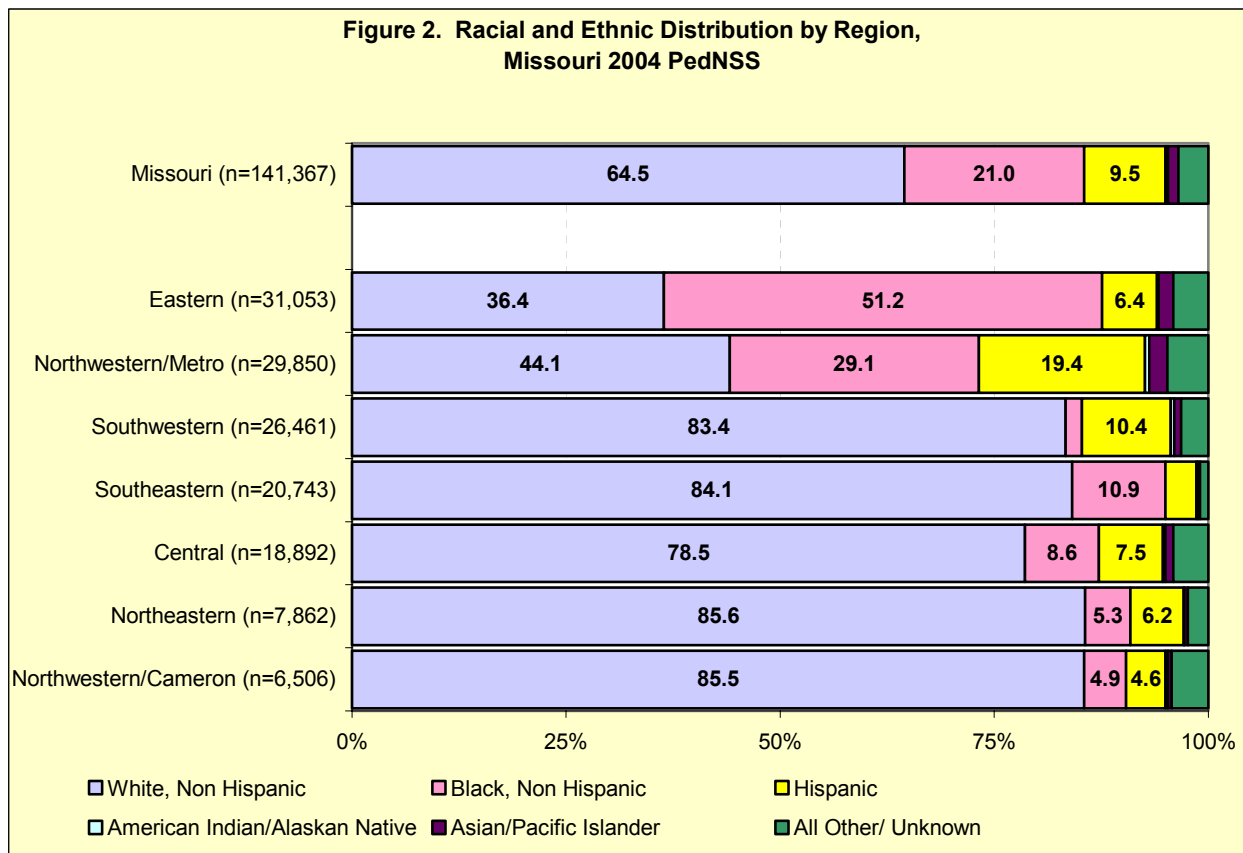


¹ The percentages for only the large racial and ethnic groups were shown on Figure 1.

² In 2001, the proportion of infants and children of Hispanic ethnicity remained unknown due to a definition change.

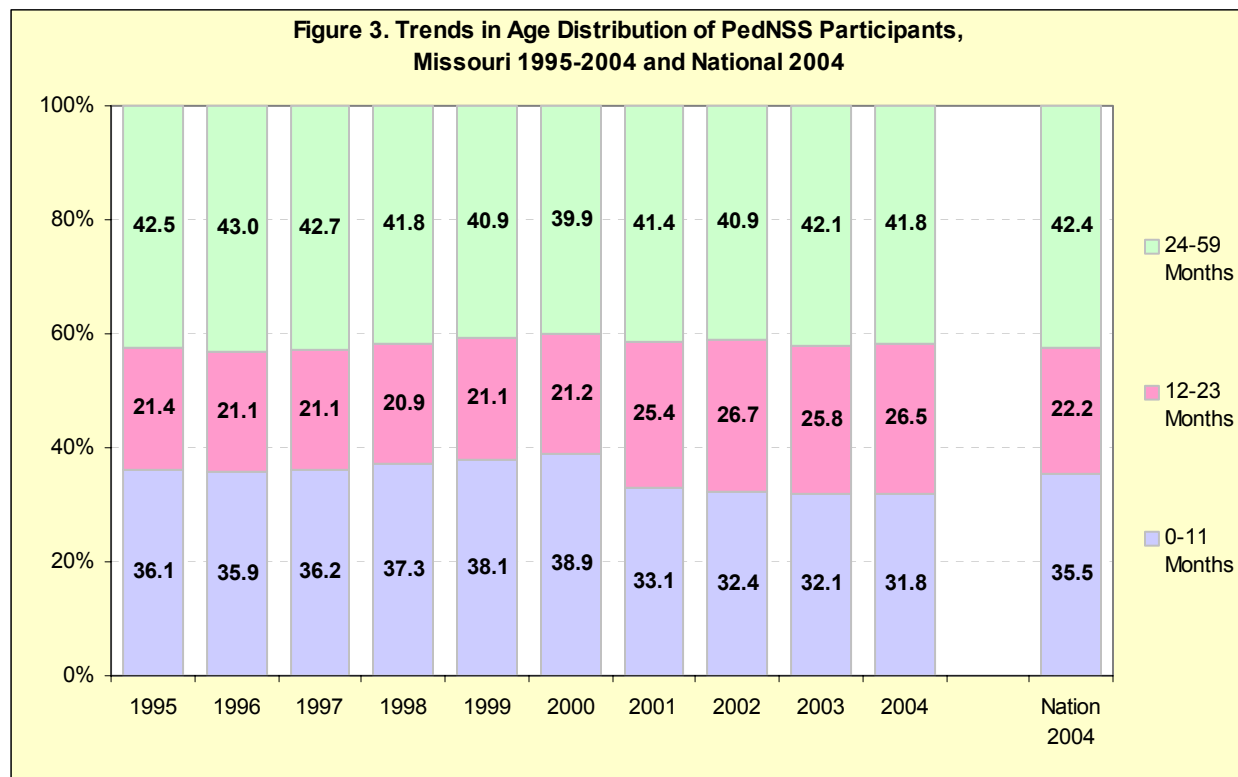
³ The proportions of racial and ethnic indicators in the national 2004 PedNSS were different from those in the Missouri 2004 PedNSS. Therefore, to make the Missouri PedNSS population comparable on indicators of interest to the Nation, a standardization procedure was applied to Missouri's PNSS data when a comparison occurs. The procedure is available on CDC's website: http://www.cdc.gov/pednss/how_to/interpret_data/what/example.htm.

The racial and ethnic distribution in Missouri differed between the rural and urban regions (Figure 2). The percentages of White, Non Hispanic participants in the urban regions of Eastern and Northwestern/Metro were only about half as many as were in the other, primarily rural regions. For example, White, Non Hispanic children in Northeastern and Northwestern/Cameron regions made up about 85.5%, while in the Eastern region this race/ethnic group was 36.4% of the PedNSS population. The largest percent of Black, Non Hispanic PedNSS participants (51.2%) was in the Eastern region and the smallest was in the Southwestern region (1.9%). The Northwestern/Metro region had 19.4% Hispanic children, while the Southeastern region had only 3.6%.



Age

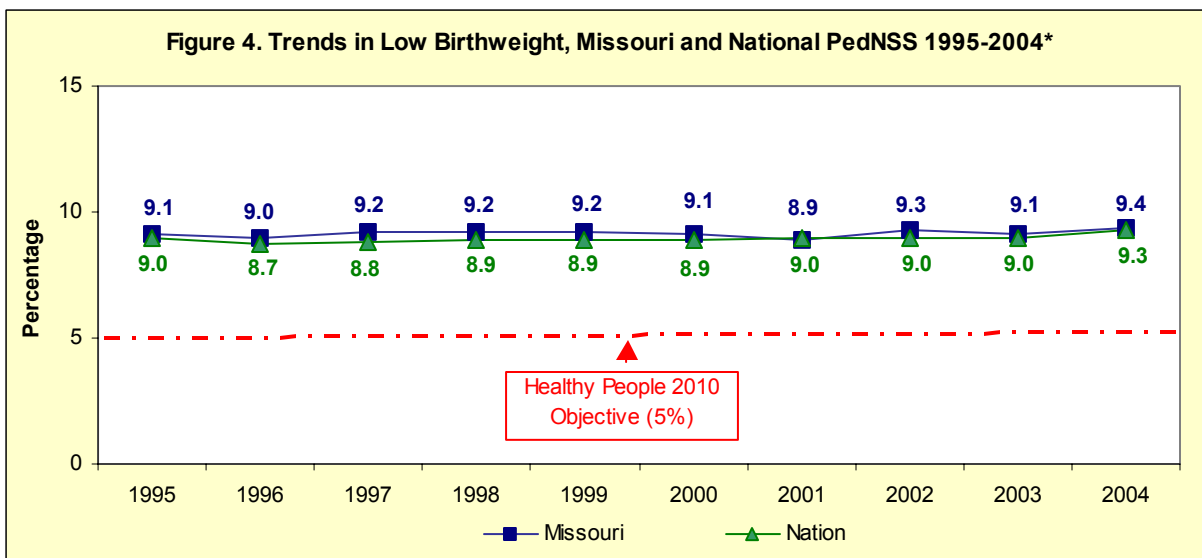
In the Missouri 2004 PedNSS, more than two thirds of the PedNSS records (68.3%) were from children age 12 to 59 months. Infants represented 31.8% of the Missouri 2004 PedNSS (Figure 3). These proportions have changed slightly during the past 10 years. Nationally, 35.5% of PedNSS participants in 2004 were younger than 12 months, 22.2% were age 12-23 months, and 42.4% were age 24-59 months.



PEDIATRIC HEALTH INDICATORS

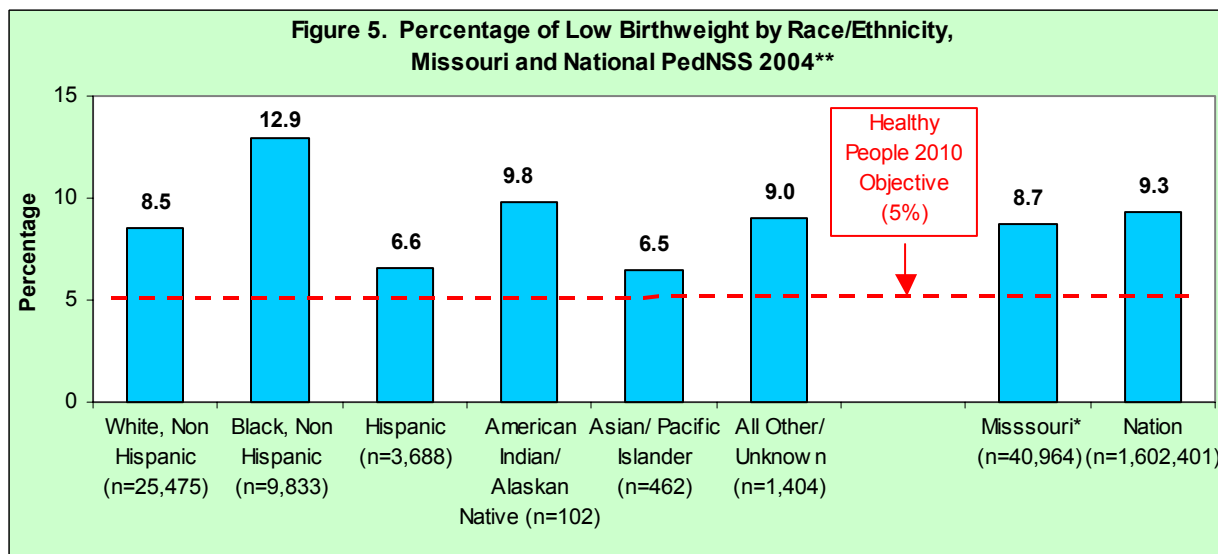
Low Birthweight

Low birthweight (less than 2,500 grams or 5.5 pounds) is a major determinant of neonatal mortality and post-neonatal mortality [1]. Infants with low birthweight are more likely to experience developmental delays and disabilities than infants with normal birthweight [2]. The main factors that can lead to low birthweight include poor maternal nutrition and maternal risky behaviors, especially smoking, drinking alcohol and the use of non-prescribed drugs. Some researchers suggested that regular intake of recommended amount of folic acid and micronutrient supplements throughout pregnancy may reduce the risk of having a low birthweight baby [3, 4]. The Healthy People 2010 Objective seeks to reduce low birthweight to 5% of all live births.



*A scale of 0%-15% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

The Missouri 2004 PedNSS population had a low birthweight rate of 9.4%. During the last 10 years, this rate has been stable (Figure 4).⁴ There has been no noticeable movement in achieving the Healthy People 2010 Objective.



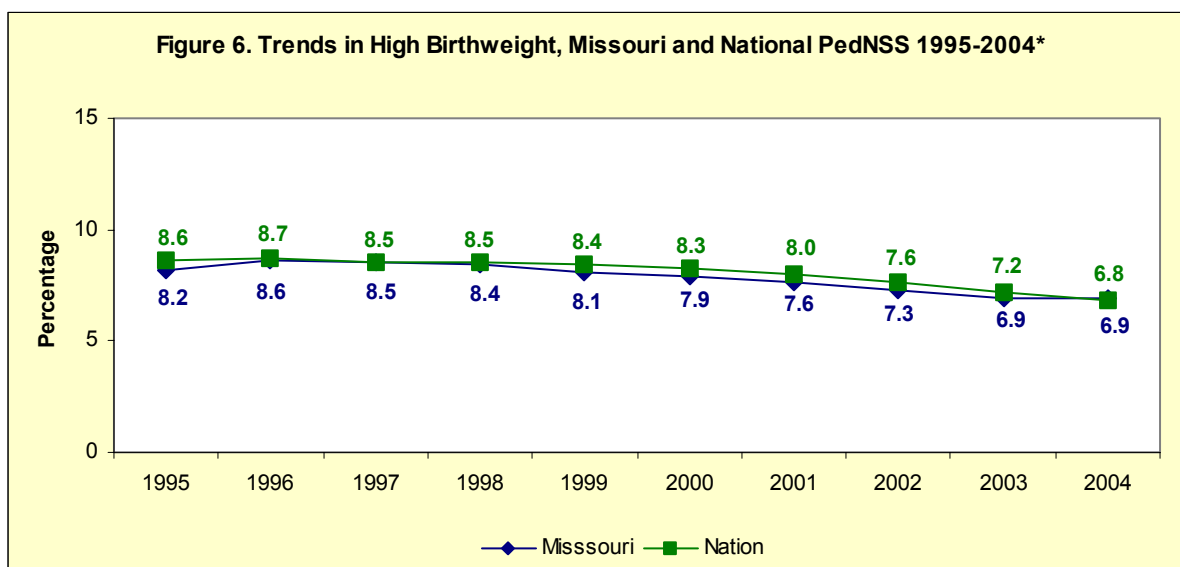
* Adjusted rate according to CDC's procedure. ** A scale of 0%-15% was used to show more detail.

The percent of low birthweight in the Missouri 2004 PedNSS varied by race and ethnicity. The prevalence was about 2.0 times higher among Black, Non Hispanic PedNSS participants (12.9%) than in Asian/Pacific Islander infants (6.5%) (Figure 5). None of the racial and ethnic groups achieved the national goal of Healthy People 2010.

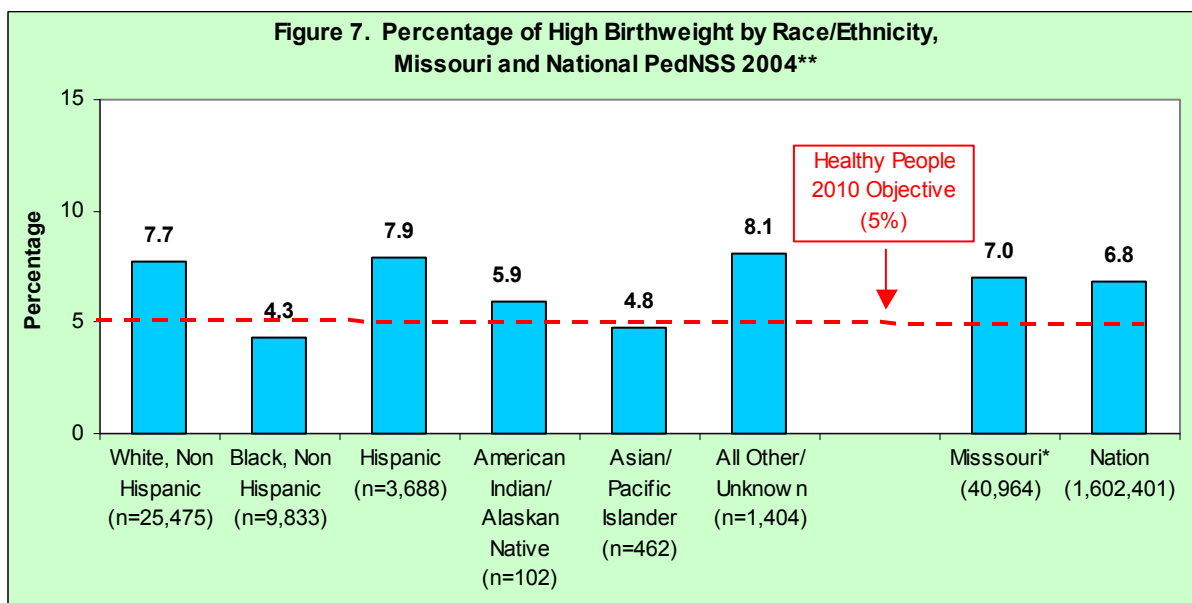
⁴ The PNSS trend data of Missouri cannot be directly compared with that of the nation since Missouri and the nation had different distributions of women on race/ethnicity.

High Birthweight

High birthweight (greater than 4,000 grams) increases the risk for infant death and birth injuries such as shoulder dystocia and congenital anomalies (especially heart disease) [5]. High birthweight may result in obesity in childhood that may extend into adult life [6]. Maternal prepregnancy overweight and greater than ideal maternal weight gain can be considered as strong predictors of high birthweight [7]. In the 2004 Missouri PedNSS, 6.9% of infants were born overweight (Figure 6). During the last 10 years, this rate was highest in 1996 (8.6%) and lowest in 2003 and 2004. Since 1996, the rate has been gradually decreasing, indicating that some progress has been made in the prevention of high birthweight.



* A scale of 0%-15% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

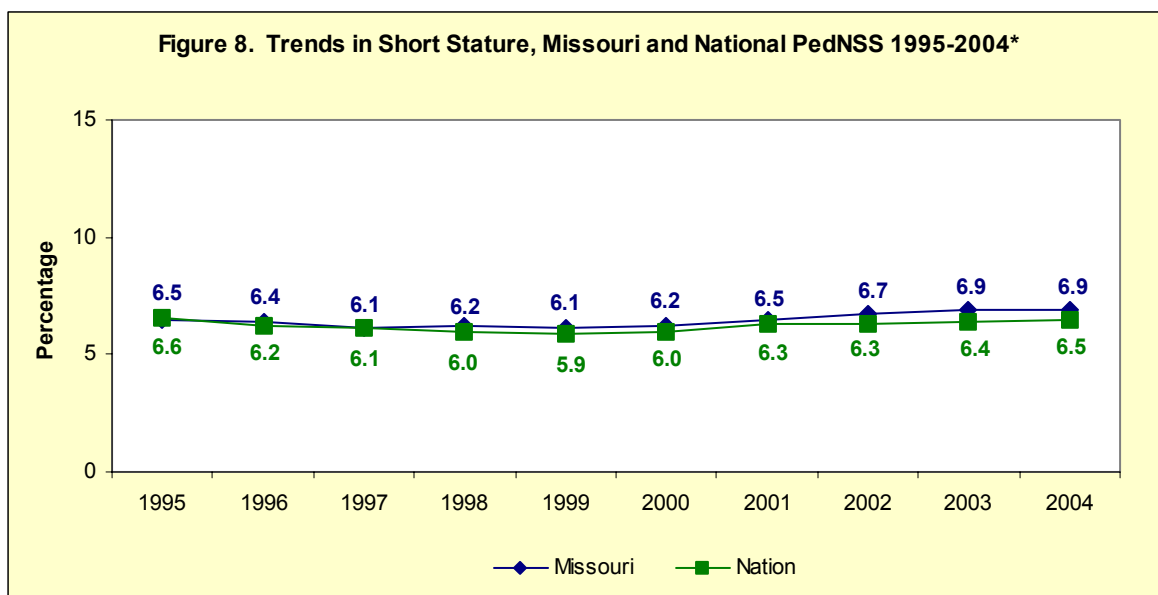


* Adjusted rate according to CDC's procedure. ** A scale of 0%-15% was used to show more detail.

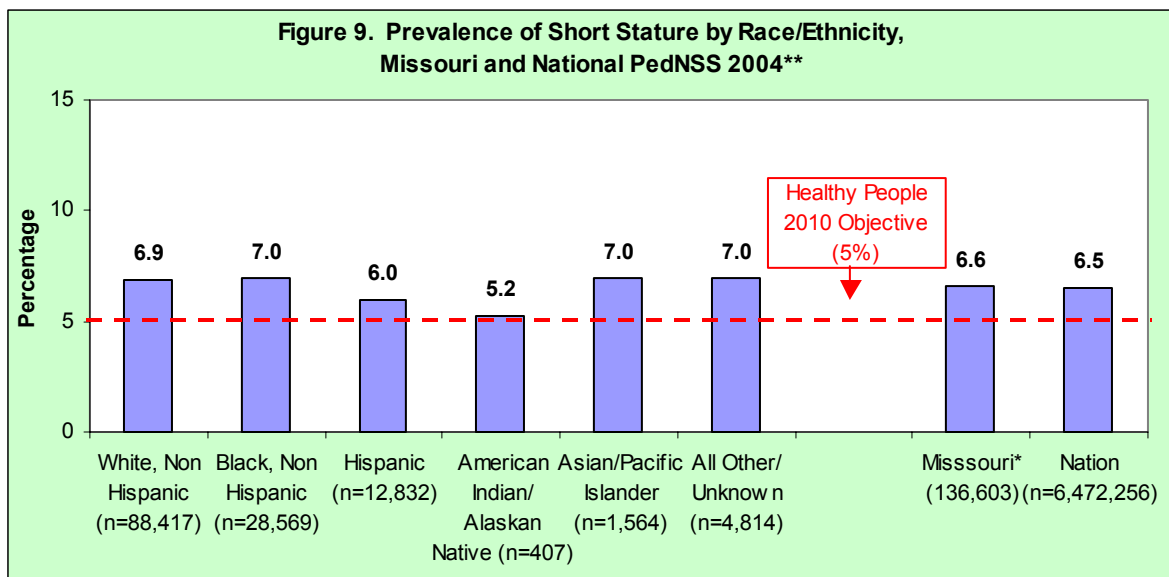
Compared to the national percent, the state's proportion of PedNSS infants born overweight was slightly higher in 2004 (Figure 7). The prevalence of high birthweight varied by racial and ethnic group. It was highest in All Other/Unknown racial ethnic groups (8.1%), and lowest in infants from the Black, Non Hispanic racial and ethnic group (4.3%).

Short Stature

Short stature is defined as a length or stature less than the 5th percentile on the CDC age- and gender-specific length or stature reference. Short stature, also referred to as low-length/height-for-age or stunting, is used as an indicator of chronic malnutrition; it reflects the long-term health and nutritional history of a child. In some children, short stature may be related to factors such as lower birthweight. One of the Healthy People 2010 objectives is to reduce growth retardation to 5% among low-income children less than 5 years of age. The prevalence of short stature in Missouri PedNSS has been slightly fluctuating from 1995 through 2004 (Figure 8). The lowest prevalence of 6.1% was in 1997 and 1999, and the highest prevalence of 6.9% was in 2003 and 2004.

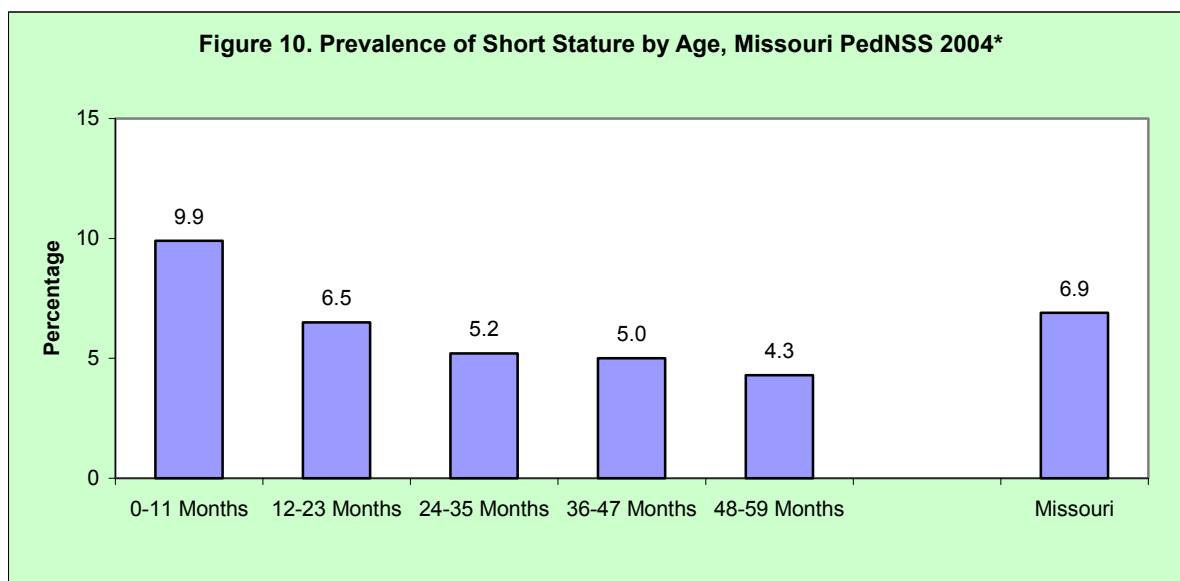


* A scale of 0%-15% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.



* Adjusted rate according to CDC's procedure. ** A scale of 0%-15% was used to show more detail.

The state's rate (6.6%) was higher than the national PedNSS in 2004 (Figure 9). The prevalence of short stature in Missouri and that of the national PedNSS in 2004 were higher than the 2010 Healthy People goal. In the 2004 Missouri PedNSS, infants and children in Black, Non Hispanic (7.0%), Asian/Pacific Islander (7.0%) race/ethnicity groups were more likely to have short stature while American Indian/Alaskan Native participants were the least likely to have short stature (5.2%).



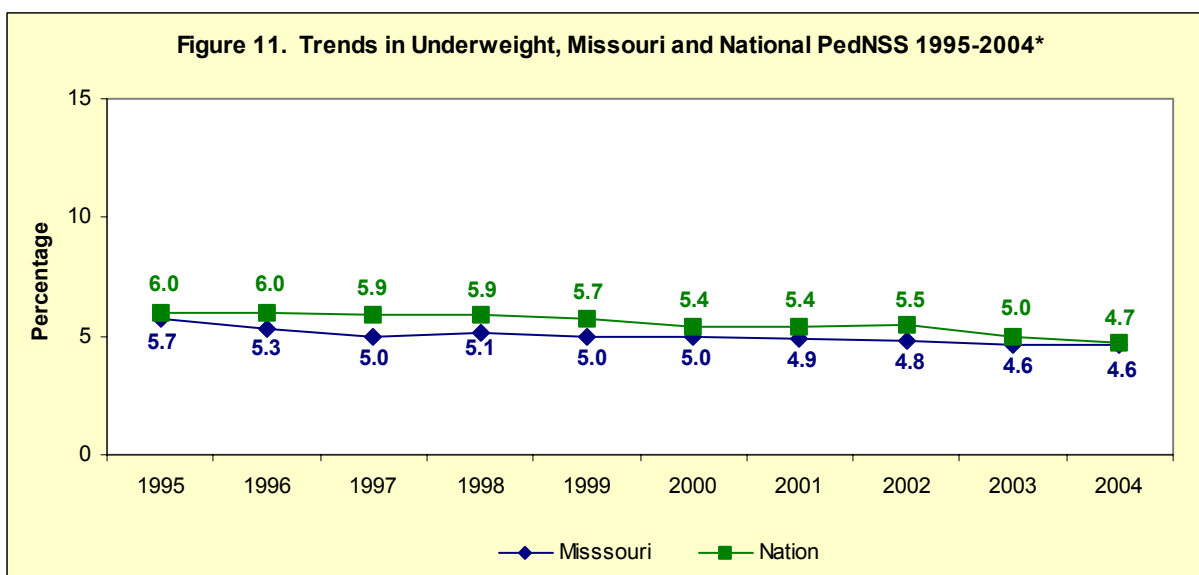
* A scale of 0%-15% was used to show more detail.

In the Missouri 2004 PedNSS, the prevalence of short stature decreased with the age of the participants (Figure 10). The age group of 0-11 months had the highest prevalence of short

stature, which was 9.9%, and the age group of 48-59 months had the lowest prevalence, which was 4.3%.

Underweight

Underweight in the PedNSS is based on the 2000 CDC gender-specific growth chart percentiles of less than the 5th percentile weight-for-length for children younger than 2 years of age and less than the 5th percentile BMI⁵-for-age for children age 2 years or older. Food shortages and disease outbreaks can result in high prevalence of underweight infants and children, so an underweight prevalence rate greater than 5% may indicate serious health and nutrition problems.

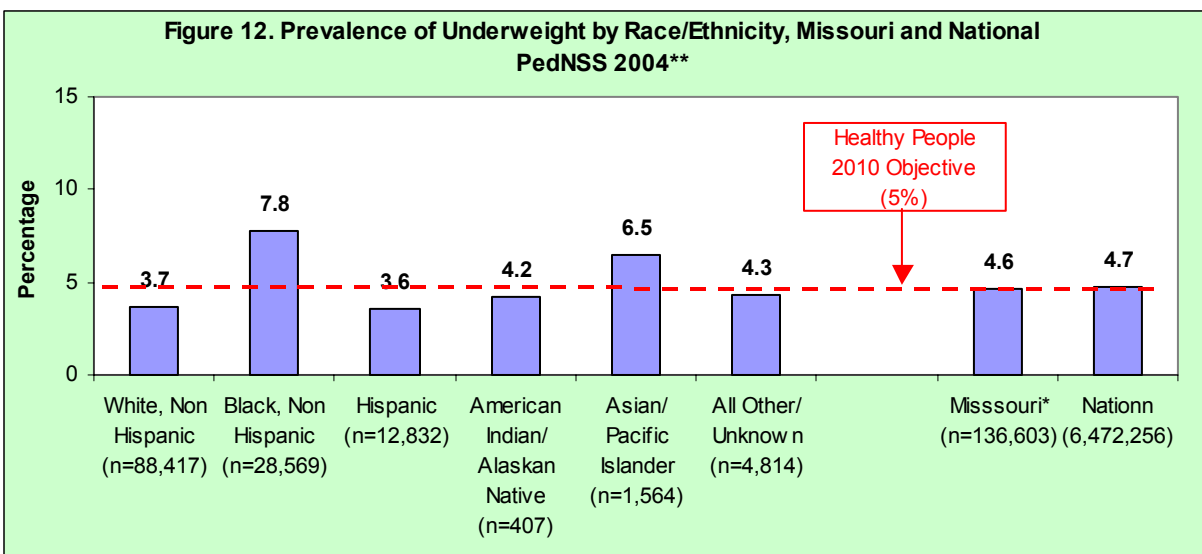


* A scale of 0%-15% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

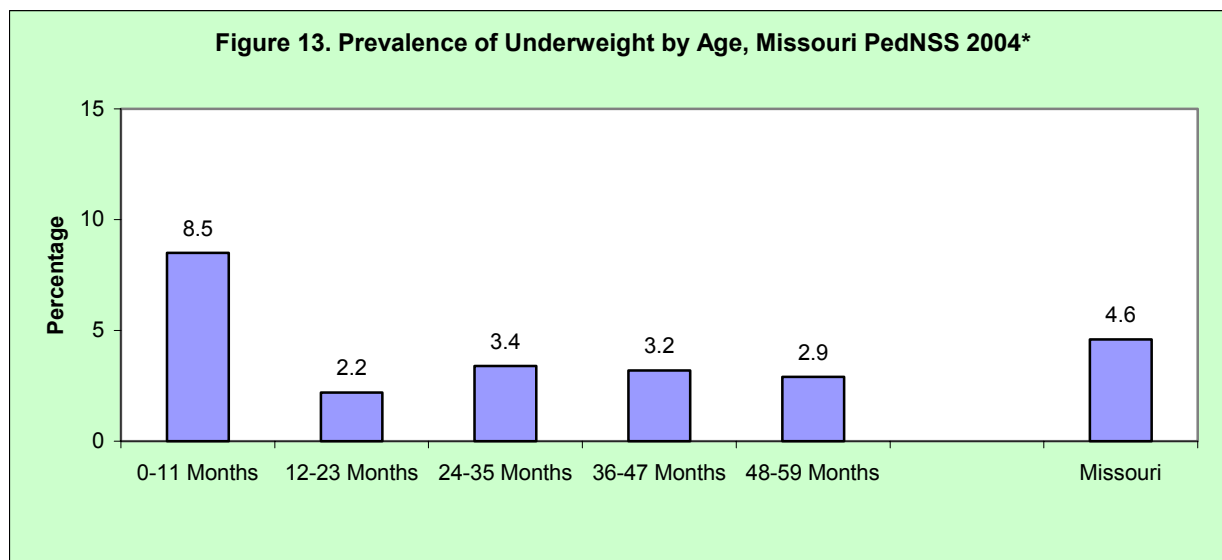
Over the last 10 years, the prevalence of underweight in the Missouri PedNSS has decreased from 5.7% in 1995 to 4.6% in 2004 (Figure 11). Overall, the 2004 rate indicated that acute malnutrition was not a public health problem in the Missouri PedNSS population, because the prevalence of underweight children under 5 years of age in 2004 (4.6%) was lower than expected by the Healthy People 2010 Objective of 5.0%.

⁵ BMI, Body Mass Index, is a number calculated from a person's weight and height. Then formula is weight in kilograms divided by height in meters squared (kg/m²).

The highest prevalence of underweight in the Missouri PedNSS 2004 occurred among Black, Non Hispanic children (7.8%) (Figure 12). The percent of Asian/Pacific Islander (6.5%) children being underweight was also higher than the Healthy People 2010 Objectives.



* Adjusted rate according to CDC's procedure. ** A scale of 0%-15% was used to show more detail.

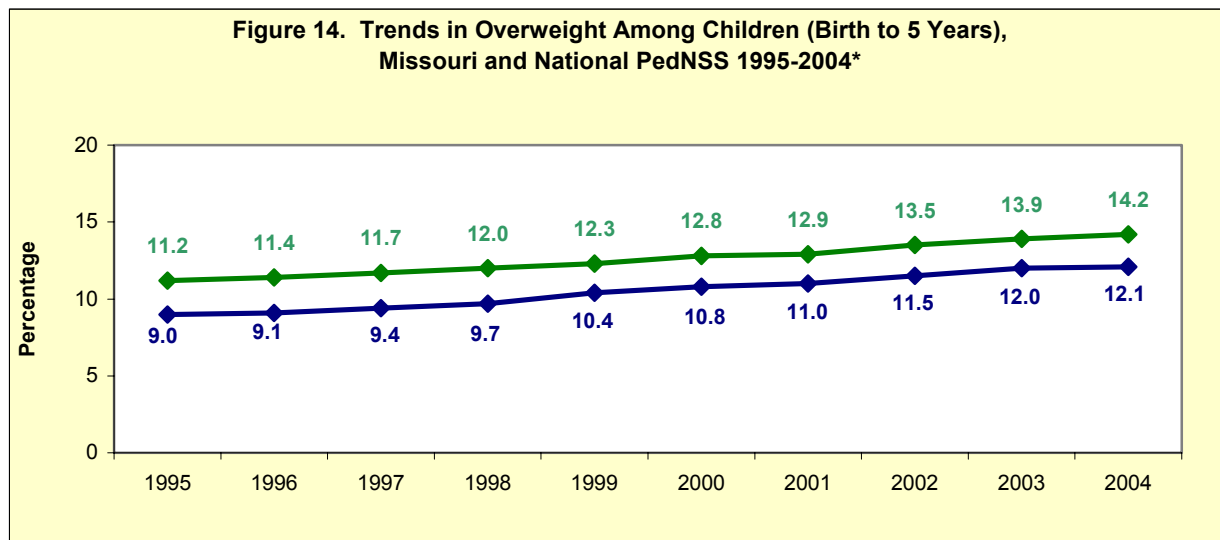


* A scale of 0%-15% was used to show more detail.

Infants (0-11 months old) were at higher risk of being underweight in the Missouri PedNSS population in year 2004 (8.5%) compared to the other age groups. The proportion for the 0-11 months age group was higher than the average of all states participating in PedNSS in 2004 (Figure 13).

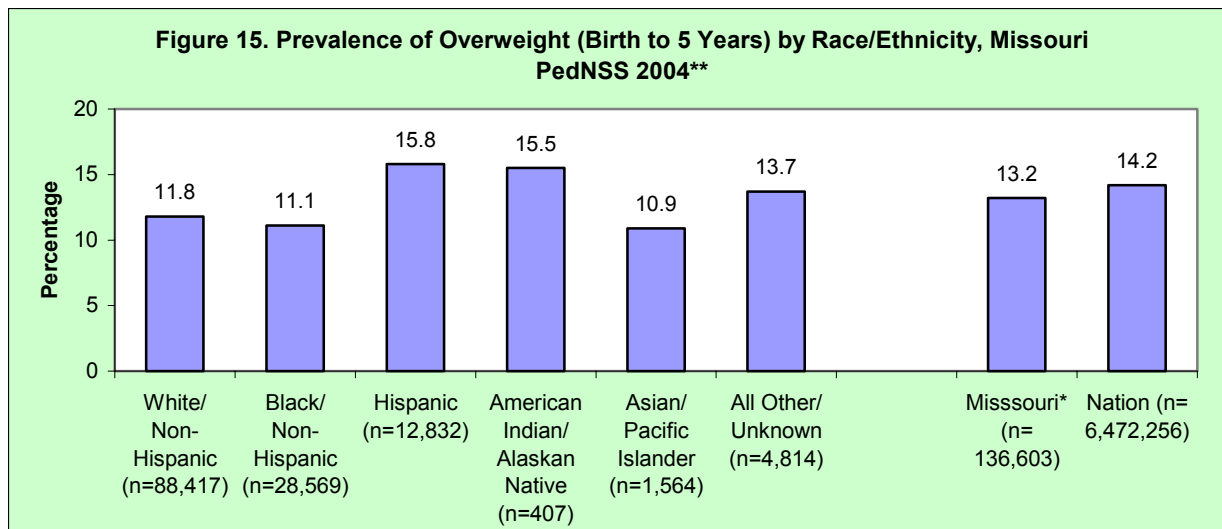
Overweight (Birth to 5 Years of Age)

The prevalence of childhood and adolescent overweight has tripled over the past two decades and associations have been identified between dietary patterns, physical activity, sedentary behaviors, and overweight [8]. In the PedNSS, overweight is defined as high weight for length or BMI-for-age and is based on the 2000 CDC growth chart percentiles of greater than or equal to the 95th percentile weight-for-length for children less than 2 years of age and greater than or equal to the 95th percentile BMI-for-age for children 2 years of age or older.



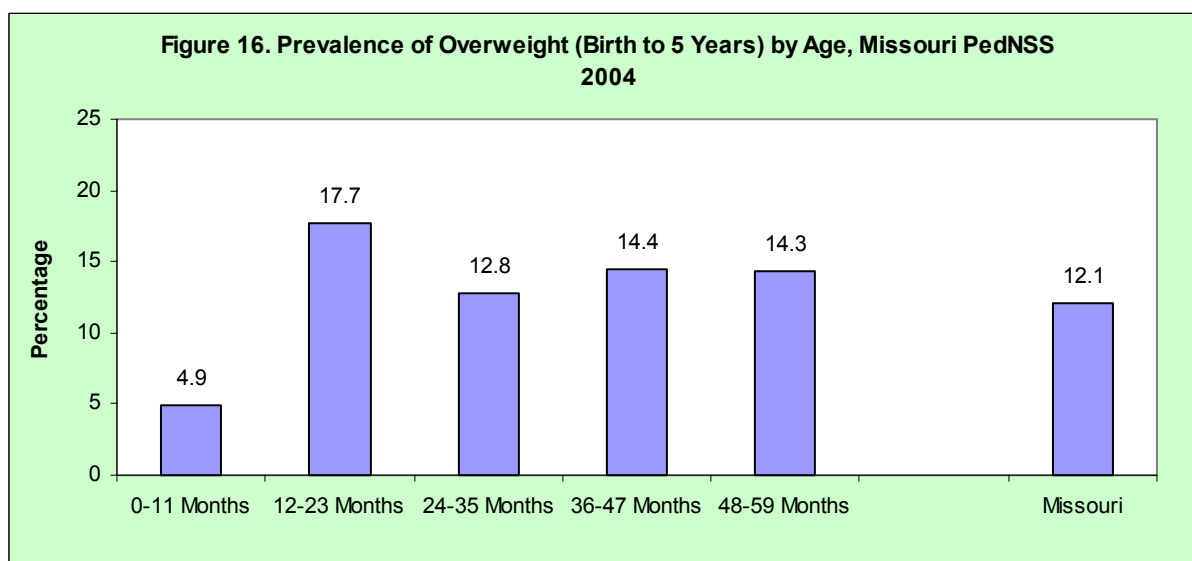
* A scale of 0%-20% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

In the Missouri 2004 PedNSS, during the last 10 years, the proportion of overweight in children from birth to age 5 years has been increasing from 9.0% in 1995 to 12.1% in 2004 (Figure 14). The national proportion in the PedNSS was higher (14.2%) than the Missouri proportion in the year 2004.



* Adjusted rate according to CDC's procedure. ** A scale of 0%-20% was used to show more detail.

The highest prevalence of overweight in the Missouri PedNSS 2004 occurred among Hispanic children (15.8%) (Figure15). The percent of Asian/Pacific Islander (10.9%) children being overweight was the lowest.



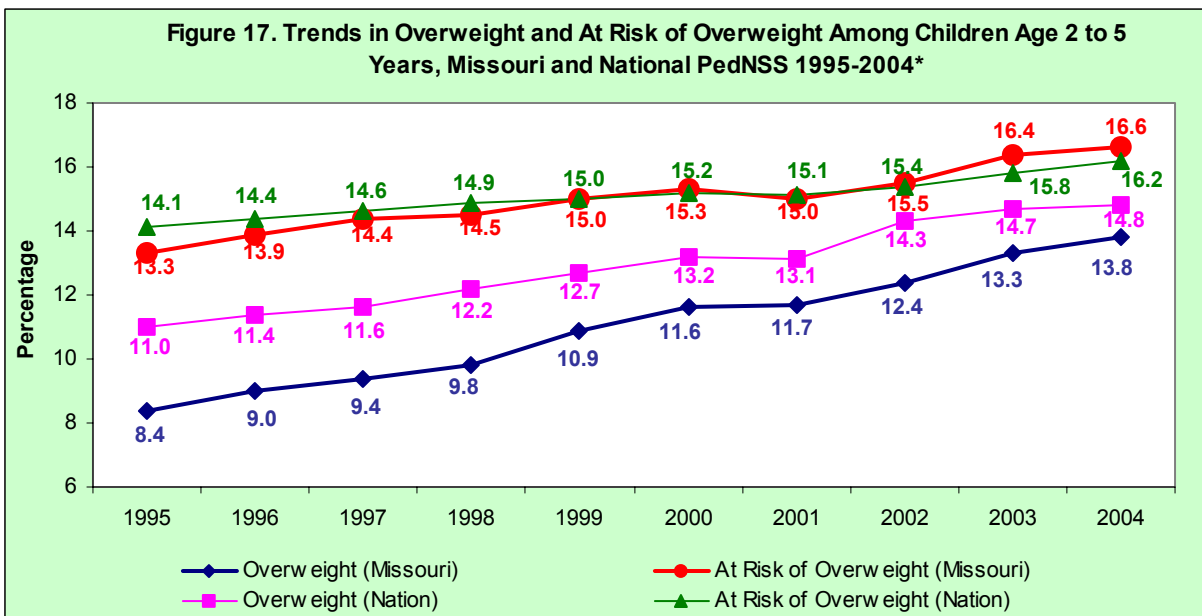
* A scale of 0%-25% was used to show more detail.

From the perspective of age groups, the highest prevalence of overweight in the Missouri PedNSS 2004 was in the 12-23 months group, and lowest prevalence was in the 0-11 months group (Figure16).

Overweight and At Risk of Overweight (2 to 5 Years of Age)

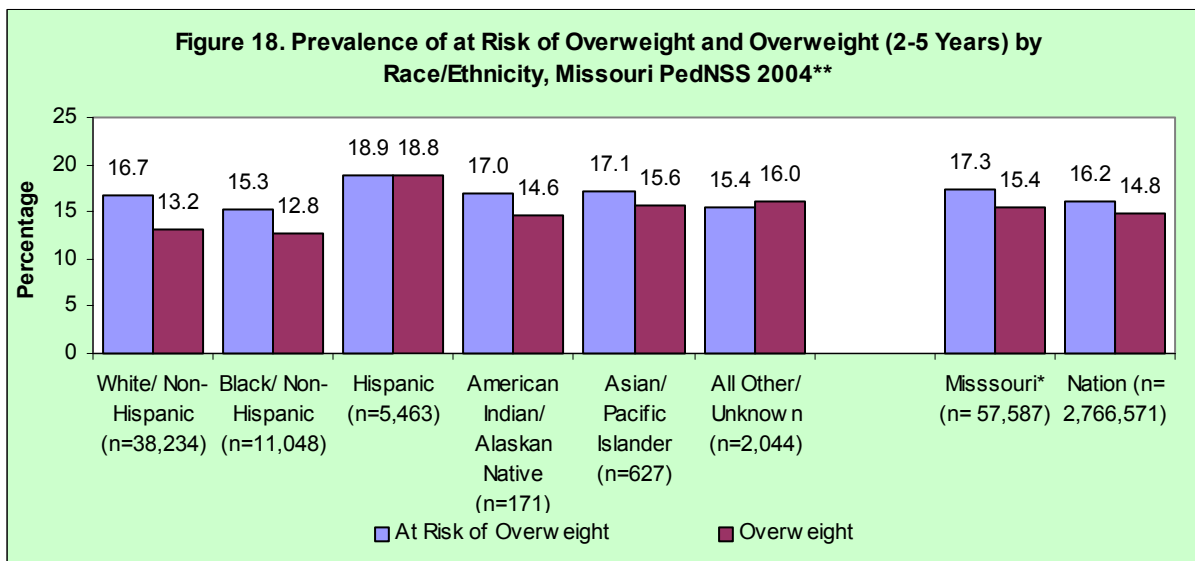
Overweight in children younger than 2 years old does not cause the same risk as for children age 2 or older. A weak association has been found between the 2 years or older group's weight and an increased risk for adult obesity [9]. Expert committees have recommended a two-level

screening for overweight in children age 2 years or older. The suggestion was to use BMI-for-age at or above the 95th percentile to define overweight and between the 85th and 95th percentile to define at risk of overweight [10].



* A scale of 6%-18% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

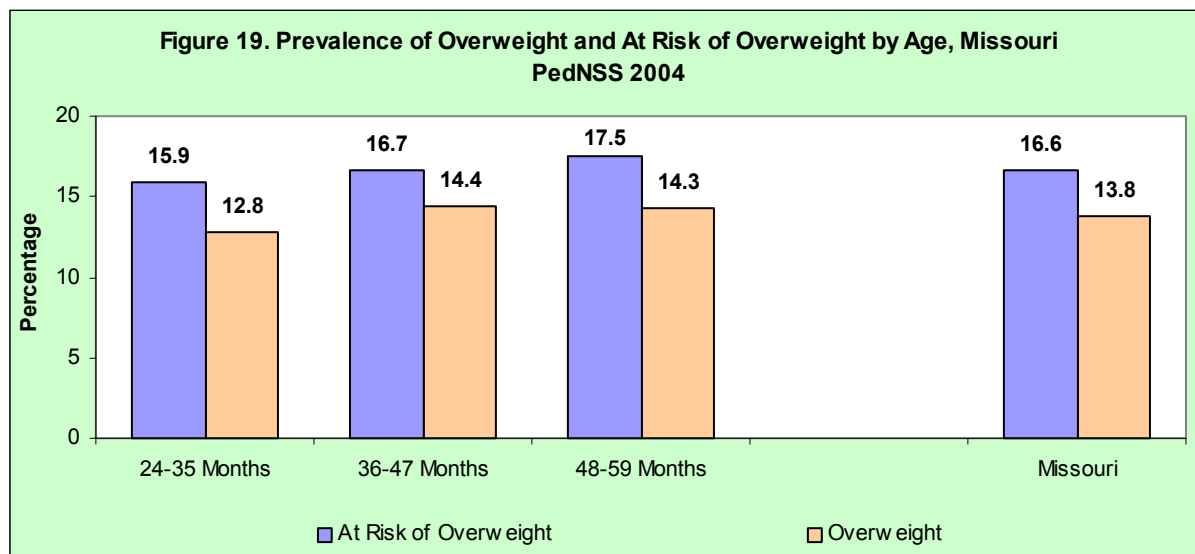
Over the 10 previous years, the rates of overweight have increased by 64.3% and at risk of overweight by 24.8% among Missouri PedNSS children, age 2 to 5 years (Figure 17).



* Adjusted rate according to CDC's procedure. ** A scale of 0%-25% was used to show more detail.

In the Missouri 2004 PedNSS, the highest rates of overweight (18.8%) and at risk of overweight (18.9%) were among Hispanic children (Figure 18). Compared to all other racial and ethnic

groups, Black, Non Hispanic PedNSS children age 2 to 5 years were the least likely to be at risk of overweight (15.3%) and overweight (12.8%).



* A scale of 0%-20% was used to show more detail.

The proportion of overweight children fluctuated with age in the Missouri PedNSS 2004 (Figure 19). In the age group 24-35 months, 12.8% of children were overweight; in the age group 36-47 months, 14.4%; and in the age group 48-59 months, 14.3% of children were overweight. By contrast, the proportion of at risk of overweight children increased with age, 15.9%, 16.7%, and 17.5% in age groups 24-35 months, 36-47 months, and 48-59 months, respectively.

Anemia

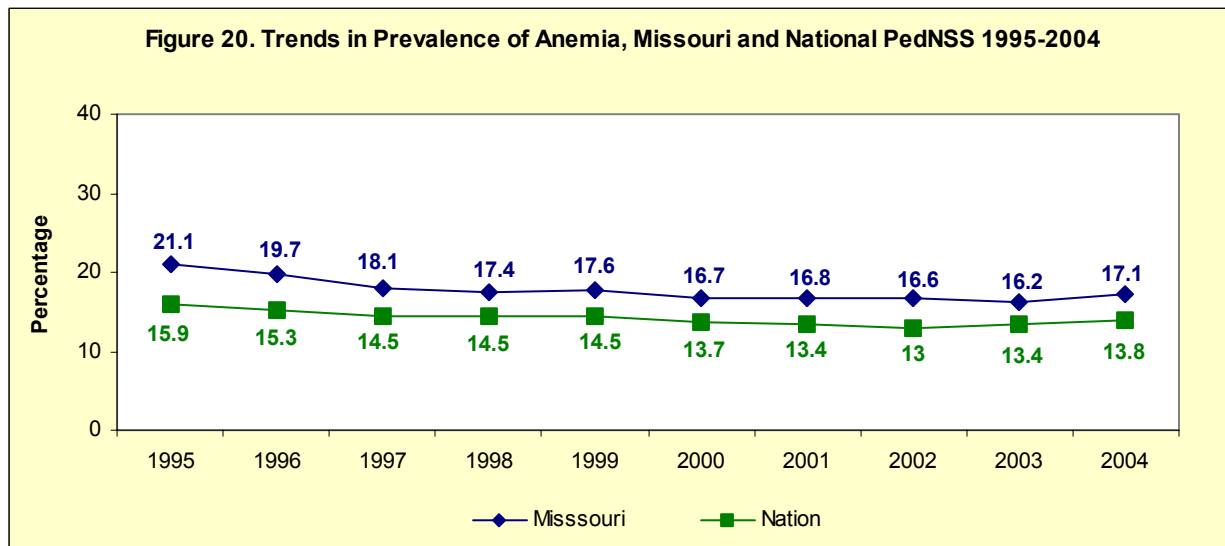
Anemia in the PedNSS refers to a hemoglobin or hematocrit level lower than the age-adjusted reference range for healthy children⁶. Anemia is the most common indicator of nutrient (iron) deficiency in the world [11]. Iron deficiency in children was associated with long-lasting diminished mental, motor and behavioral functioning [12]. Racial differences apparently exist, with Black, Non Hispanic children having lower normal values than White, Non Hispanic and Asian/Pacific Islander children of the same age and socioeconomic background. The Healthy People 2010 Objective is to reduce anemia among children age 1 to 2 years to 5% and children age 3 to 4 years to 1%⁷.

In Missouri, the prevalence of anemia in infants and children participating in the PedNSS declined noticeably since 1995 (Figure 20). It reached the lowest point of 16.2% in 2003, and

⁶ In PedNSS, children age 1 to 2 years are considered anemic if their hemoglobin concentration is less than 11.0 g/dL or their hematocrit level is less than 33.0%. Children age 2-5 years are considered anemic if their hemoglobin concentration is less than 11.1 g/dL or their hematocrit level is less than 33.3%.

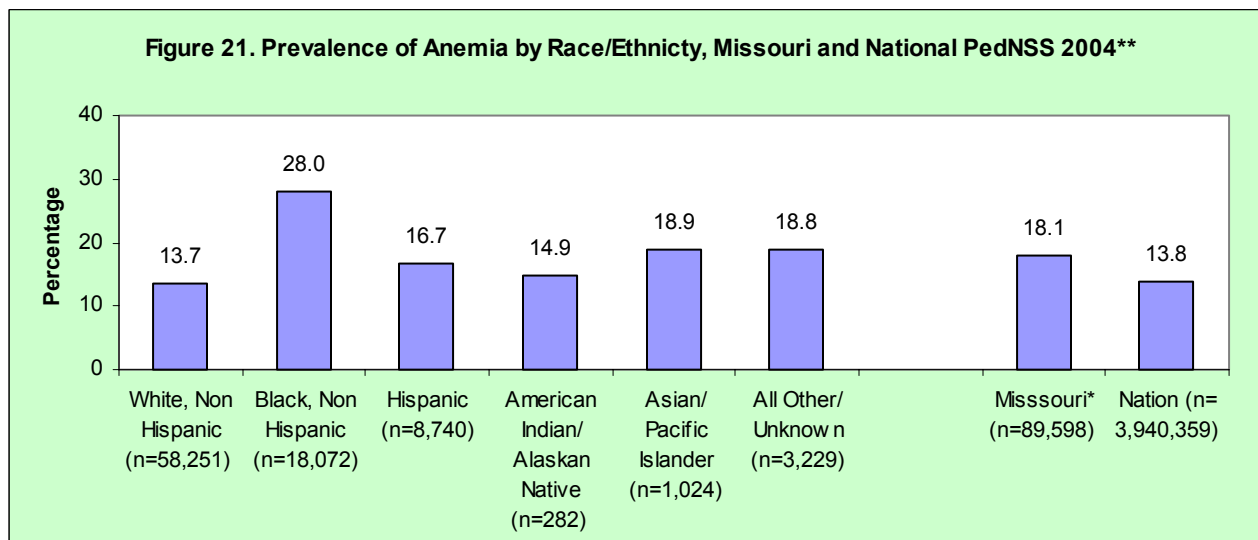
⁷ In PedNSS, age groups are 6-11 months, 12-17 months, 18-23 months, 24-35 months, and 36-59 months. Therefore, this classification does not allow comparing low hemoglobin/hematocrit rates between PedNSS and the Healthy People 2010 objective.

started rising in 2004 (17.1%). However, the Missouri rate continued to be higher than the average of all PedNSS participating states.



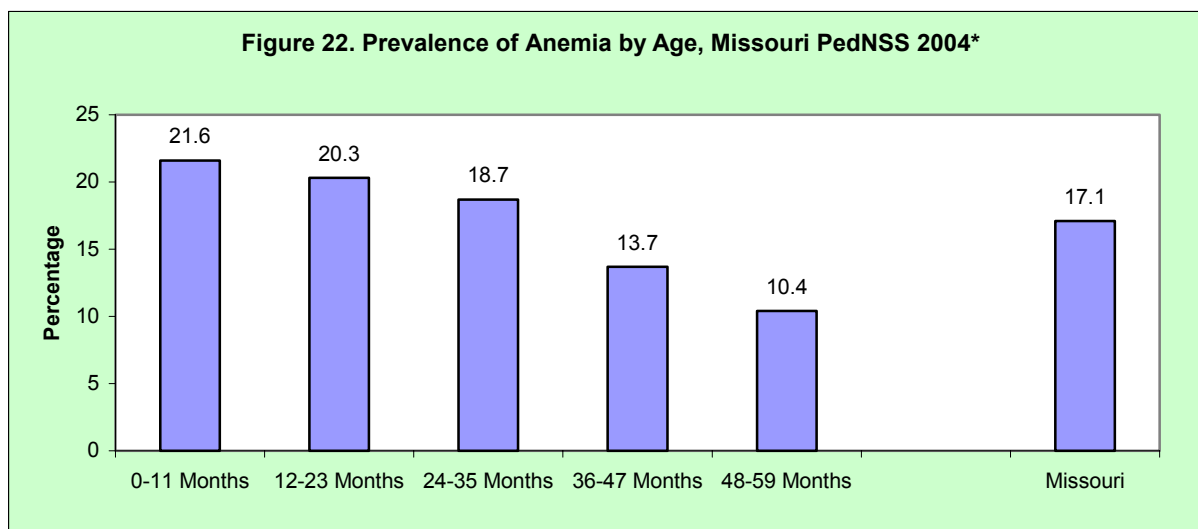
* A scale of 0%-40% was used to show more detail. It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

The proportion of infants and children with anemia (low hemoglobin/hematocrit) in the Missouri 2004 PedNSS varied in different racial and ethnic groups. The highest proportion of participants having low hemoglobin/hematocrit was in the Black, Non Hispanic Missouri PedNSS population (28.0%) (Figure 21). The lowest prevalence of anemia was in the White, Non Hispanic group (13.7%).



* Adjusted rate according to CDC's procedure. ** A Scale 0%-40% was used to show more detail.

The highest prevalence of low hemoglobin/hematocrit (21.6%) in the Missouri PedNSS in 2004 occurred in infants 6-11 months old (Figure 22). In general, rates decreased as the children got older.



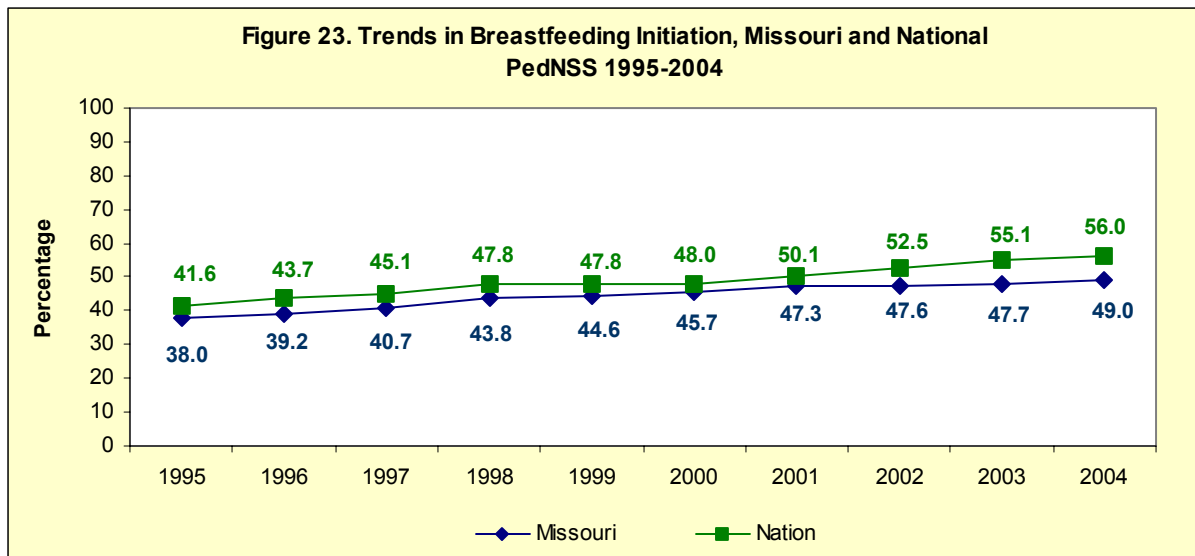
* A Scale 0%-25% was used to show more detail.

Breastfeeding Initiation

The health and economic benefits of breastfeeding are well documented. According to the American Academy of Pediatrics (AAP), human milk is “uniquely suited” for human infants [13]. With rare exceptions, human milk provides the most complete form of nutrition for infants, including premature and sick newborns [14]. Accordingly, the AAP recommends that infants be breastfed exclusively for the first six months after birth and that breastfeeding continue through the entire first year of life. Breastfeeding after the first 12 months should continue as long as mutually desired. When direct breastfeeding is not possible, expressed breast milk, fortified when necessary for the premature infant, should be provided.

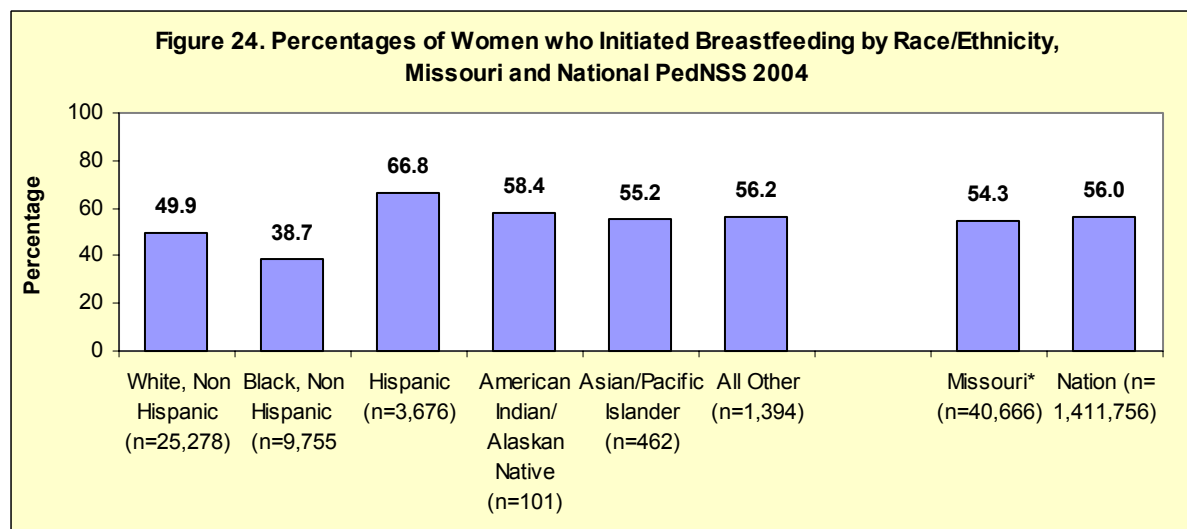
In the PedNSS, breastfeeding initiation is determined by ever breastfed, while breastfeeding duration is determined by breastfed at least 6 months and breastfed at least 12 months. These breastfeeding practices were chosen in order to track three of the Healthy People 2010 objectives: increase the proportion of mothers who breastfeed in the early postpartum period to 75% (objective 16-19a); increase the proportion of mothers who breastfeed for 6 months to 50% (16-19b); increase the proportion of mothers who breastfeed for 1 year to 25% (16-19c).

In Missouri, the Women, Infants and Children (WIC) program collects breastfeeding initiation data when a mother is certified and recertified in the program. If the mother chose to quit breastfeeding, she did not have to report it to the agency in 2004; the WIC clinics did not change breastfeeding information in infants’ records even if the formula check was issued. Therefore, data on breastfeeding duration in 2004 were not complete. However beginning in 2006, the breastfeeding record will be updated every time mothers visit the WIC clinic.



Note: It is advised that the trends data in Missouri and the nation should not be compared directly since they had different distributions on race/ethnicity.

In Missouri, the overall prevalence of breastfeeding initiation in the PedNSS has been increasing over the last 10 years from 38.0% in 1995 to 49.0% in 2004 (Figure 23). The Healthy People 2010 objective in breastfeeding initiation (75%) was far from being achieved in the Missouri PedNSS population in 2004. In addition, the initiation rate was lower than the national level (56.0%). Hispanic babies were more likely to be breastfed at birth than infants in all other racial and ethnic groups in the Missouri 2004 PedNSS (66.8%) (Figure 24). The Black, Non Hispanic infants had the lowest rate of breastfeeding initiation in 2004 (38.7%).



* Adjusted rate according to CDC's procedure.

CONCLUSIONS AND RECOMMENDATIONS

An important use of the PedNSS data is monitoring the Healthy People 2010 Objectives. These objectives were designed to serve as a goal for monitoring progress towards improving the health of the nation. The 10-year trend data (from 1995 to 2004) showed some improvements in decreasing the proportion of underweight infants and children in the PedNSS population. Additionally, progress has been made in breastfeeding initiation. However, the 2010 Healthy People objectives pertaining to reduction of the percent of low birthweight and growth retardation (short stature) have not shown advances (Table 1).

| Table 1: Monitoring Healthy People 2010 Objectives Using Missouri PedNSS Trends 1995-2004 and Comparing Missouri and National PedNSS Data on Selected Health and Behavioral Indicators | | | | |
|---|--|---|----------------------------------|------------------------------------|
| Indicator | Healthy People 2010 Objectives Monitored by PedNSS* | Trend of the Missouri PedNSS 1995-2004 | National PedNSS data 2004 | Missouri PedNSS data 2004** |
| Low Birthweight | Decrease low birthweight to 5% (16-10b) | Stable | 9.3 | 8.7 |
| Short Stature Underweight | Reduce growth retardation among low-income children under 5 years of age to 5% (19-4) Short Stature Underweight | Stable Decrease since 1995 | 6.5 4.7 | 6.6 4.6 |
| Ever Breastfed | Increase the proportion of mothers who breastfeed in the early postpartum period to 75% (16-19a) | Increase since 1995 | 56.0 | 54.3 |
| Breastfed At Least 6 Months | Increase the proportion of mothers who breastfeed at 6 months to 50 % (16-19b) | | 23.3 | No reliable data |
| Breastfed At Least 12 Months | Increase the proportion of mothers who breastfeed at 12 months to 25% (16-19c) | | 17.5 | No reliable data |

* Healthy People 2010 Objectives on web: <http://www.healthypeople.gov>.

** Adjusted rates according to CDC's procedure.

Compared with the national PNSS data as shown in Table 1, the percentage of low birth weight babies in Missouri PedNSS 2004 was lower than the national average level. However, the breastfeeding initiation rate in Missouri PedNSS 2004 was lower than the national average level. Missouri had almost the same rates on indicators of short stature and underweight as those in the national PedNSS in this year.

The PedNSS data summary indicate the need for the following actions:

- Prevent low birthweight by providing preconception nutrition care and outreach activities to promote early identification of pregnancy and early entry into comprehensive prenatal care, including medical care and WIC program services.
- Identify children with short stature and appropriately monitor to assure that they receive adequate nutrients to promote optimal growth, and that there are no other health problems limiting growth.
- Implement innovative strategies to reverse the rising trend of overweight in young children by increasing breastfeeding, increasing physical activity, promoting increased

consumption of fruits and vegetables, and decreasing sedentary time. Routinely screen for overweight and at risk of overweight using BMI-for-age recommended by the American Academy of Pediatrics Policy Statement [15].

- Conduct hemoglobin/hematocrit screening to identify all infants and children at highest risk of having iron deficiency anemia, develop and implement effective intervention strategies, including nutrition education focused on iron rich foods and iron absorption-enhancing foods and provide follow-up to improve iron nutrition status.
- Promote and support breastfeeding through medical care systems, work sites and communities.

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